**What Is Claimed Is:**

1. A method for computing payment discounts awarded to winning agents in an exchange, said method comprising:

computing a Vickrey discount to each said winning agent as the difference between available surplus with all agents present minus available surplus without said winning agent; and

computing said payment discounts by adjusting said Vickrey discounts so as to constrain said exchange to budget-balance.

2. The method of claim 1 wherein said adjusting step further comprises:

selecting a distance function comprising a metric of the distance between said payment discounts and said Vickrey discounts;

minimizing said distance function under said budget-balance constraint and one or more bounding constraints;

deriving a parameterized payment rule for said distance function;

determining an allowable range of parameters so as to maintain budget-balance; and

selecting values for said parameters within said allowable range.

3. The method of claim 2 wherein said values for said parameters are selected within said allowable range so as to minimize agent manipulation.

4. The method of claim 2 wherein said bounding constraints comprises a constraint that said payment discounts be non-negative.

5. The method of claim 2 wherein said bounding constraints comprises a constraint that said payment discounts not exceed said Vickrey discounts.

6. The method of claim 2 wherein said distance function is selected from:

$$L_2\left(\Delta, \Delta^V\right)=\left(\sum_l\left(\Delta_l^V-\Delta_l\right)^2\right)^{1/2},$$

$$L_\infty\left(\Delta, \Delta^V\right)=\max_l\left|\Delta_l^V-\Delta_l\right|,$$

$$L_{RE}\left(\Delta, \Delta^V\right)=\sum_l\left(\Delta_l^V-\Delta_l\right)/\Delta_l^V,$$

$$L_\pi\left(\Delta, \Delta^V\right)=\prod_l \Delta_l^V/\Delta_l,$$

$$L_{RE2}\left(\Delta, \Delta^V\right)=\sum_l\left(\Delta_l^V-\Delta_l\right)^2/\Delta_l^V, \text{ and}$$

$$L_{RE}\left(\Delta, \Delta^V\right)=\sum_l \Delta_l^V\left(\Delta_l^V-\Delta_l\right).$$

7. The method of claim 6, wherein said parameterized payment rule comprises:

a Threshold Rule $\max(0, \Delta_l^V - C)$, $C \geq 0$ if said selected distance function is $L_2\left(\Delta, \Delta^V\right)$ or $L_\infty\left(\Delta, \Delta^V\right)$;

a Small Rule $\Delta_l^V$ if $\Delta_l^V \leq C$, $C \geq 0$ if said selected distance function is $L_{RE}\left(\Delta, \Delta^V\right)$;

a Reverse Rule $\min(\Delta_l^V, C)$, $C \geq 0$ if said selected distance function is $L_\pi\left(\Delta, \Delta^V\right)$;

a Fractional Rule $\mu\Delta_l^V$, $0 \leq \mu \leq 1$ if said selected distance function is $L_{RE2}\left(\Delta, \Delta^V\right)$; and

a Large Rule $\Delta_l^V$ if $\Delta_l^V \geq C$, $C \geq 0$ if said selected distance function is $L_{RE}\left(\Delta, \Delta^V\right)$.

8. A program storage device readable by machine, tangibly embodying a program of instructions executable by the machine to perform method steps for computing payment discounts awarded to winning agents in an exchange, said method steps comprising:

computing a Vickrey discount to each said winning agent as the difference between available surplus with all agents present minus available surplus without said winning agent; and

computing said payment discounts by adjusting said Vickrey discounts so as to constrain said exchange to budget-balance.

9. The apparatus of claim 8 wherein said adjusting step further comprises:

selecting a distance function comprising a metric of the distance between said payment discounts and said Vickrey discounts;

minimizing said distance function under said budget-balance constraint and one or more bounding constraints;

deriving a parameterized payment rule for said distance function;

determining an allowable range of parameters so as to maintain budget-balance; and

selecting values for said parameters within said allowable range.

10. The apparatus of claim 9 wherein said values for said parameters are selected within said allowable range so as to minimize agent manipulation.

11. The apparatus of claim 9 wherein said bounding constraints comprises a constraint that said payment discounts be non-negative.

12. The apparatus of claim 9 wherein said bounding constraints comprises a constraint that said payment discounts not exceed said Vickrey discounts.

13. The apparatus of claim 9 wherein said distance function is selected from:

$$L_2\left(\Delta, \Delta^V\right) = \left(\sum_l \left(\Delta_l^V - \Delta_l\right)^2\right)^{1/2},$$

$$L_\infty\left(\Delta, \Delta^V\right) = \max_l \left|\Delta_l^V - \Delta_l\right|,$$

$$L_{RE}\left(\Delta, \Delta^V\right) = \sum_l \left(\Delta_l^V - \Delta_l\right) / \Delta_l^V,$$

$L_\pi(\Delta, \Delta^V) = \prod_l \Delta_l^V / \Delta_l$ ,

$L_{RE2}(\Delta, \Delta^V) = \sum_l (\Delta_l^V - \Delta_l)^2 / \Delta_l^V$ , and

$L_{RE}(\Delta, \Delta^V) = \sum_l \Delta_l^V (\Delta_l^V - \Delta_l)$.

14. The apparatus of claim 13, wherein said parameterized payment rule comprises:

a Threshold Rule $\max(0, \Delta_l^V - C)$, $C \geq 0$ if said selected distance function is $L_2(\Delta, \Delta^V)$ or $L_\infty(\Delta, \Delta^V)$;

a Small Rule $\Delta_l^V$ if $\Delta_l^V \leq C$, $C \geq 0$ if said selected distance function is $L_{RE}(\Delta, \Delta^V)$;

a Reverse Rule $\min(\Delta_l^V, C)$, $C \geq 0$ if said selected distance function is $L_\pi(\Delta, \Delta^V)$;

a Fractional Rule $\mu\Delta_l^V$, $0 \leq \mu \leq 1$ if said selected distance function is $L_{RE2}(\Delta, \Delta^V)$; and

a Large Rule $\Delta_l^V$ if $\Delta_l^V \geq C$, $C \geq 0$ if said selected distance function is $L_{RE}(\Delta, \Delta^V)$.

15. An automated system for computing payment discounts awarded to winning agents in an exchange, comprising:

means for computing a Vickrey discount to each said winning agent as the difference between available surplus with all agents present minus available surplus without said winning agent;

means for computing said payment discounts by adjusting said Vickrey discounts so as to constrain said exchange to budget-balance, wherein said adjusting means step further comprises:

means for selecting a distance function comprising a metric of the distance between said payment discounts and said Vickrey discounts, wherein said distance function is selected from:

$$L_2\left(\Delta, \Delta^V\right) = \left(\sum_l \left(\Delta_l^V - \Delta_l\right)^2\right)^{1/2} ,$$

$$L_\infty\left(\Delta, \Delta^V\right) = \max_l \left|\Delta_l^V - \Delta_l\right| ,$$

$$L_{RE}\left(\Delta, \Delta^V\right) = \sum_l \left(\Delta_l^V - \Delta_l\right) / \Delta_l^V ,$$

$$L_\pi\left(\Delta, \Delta^V\right) = \prod_l \Delta_l^V / \Delta_l ,$$

$$L_{RE2}\left(\Delta, \Delta^V\right) = \sum_l \left(\Delta_l^V - \Delta_l\right)^2 / \Delta_l^V \text{ , and}$$

$$L_{RE}\left(\Delta, \Delta^V\right) = \sum_l \Delta_l^V \left(\Delta_l^V - \Delta_l\right) ;$$

means for minimizing said distance function under said budget-balance constraint and one or more bounding constraints, wherein said bounding constraints comprises a constraint that said payment discounts be non-negative and a constraint that said payment discounts not exceed said Vickrey discounts;

means for deriving a parameterized payment rule for said distance function, wherein said parameterized payment rule comprises:

a Threshold Rule $\max(0, \Delta_l^V - C)$, $C \geq 0$ if said selected distance function is $L_2\left(\Delta, \Delta^V\right)$ or $L_\infty\left(\Delta, \Delta^V\right)$;

a Small Rule $\Delta_l^V$ if $\Delta_l^V \leq C$, $C \geq 0$ if said selected distance function is $L_{RE}\left(\Delta, \Delta^V\right)$;

a Reverse Rule $\min(\Delta_l^V, C)$, $C \geq 0$ if said selected distance function is $L_\pi\left(\Delta, \Delta^V\right)$;

a Fractional Rule $\mu\Delta_l^V$, $0 \leq \mu \leq 1$ if said selected distance function is $L_{RE2}\left(\Delta, \Delta^V\right)$; and

a Large Rule $\Delta_l^V$ if $\Delta_l^V \geq C$, $C \geq 0$ if said selected distance function is $L_{RE}\left(\Delta, \Delta^V\right)$;

means for determining an allowable range of parameters so as to maintain budget-balance; and

means for selecting values for said parameters within said allowable range and wherein said values for said parameters are selected within said allowable range so as to minimize agent manipulation.